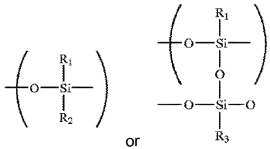
DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-3, 12-13, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PGPub 2003/0091923 (Kobayashi) in view of US PGPub 2002/0064724 (Nakamura) and US PGPub 2002/0076638 (Tamura).

Kobayashi discloses a two-component developer comprising a carrier and a polymer toner (PP 0018), wherein the carrier is a resin-coated carrier (PP 0025), wherein the coating resin may comprise a cross-linkable fluorine-modified silicone resin (PP 0030-0033), wherein the silicone resin may be coupled with an aminosilane coupling agent, which is present in an amount of about 23% by weight (PP 0100). The toner may comprise a polymer (binder), a colorant, and surface active agents (PP 0045), and a fixibility improving agent (PP 0046), wherein the surface active agents may be present in an amount of 0.01 to 10% by weight (PP 0054). The developer may be 5% by weight of the toner and 95% by weight of the carrier (PP 0079). The fluorine-modified silicone resin may be obtained hydrolyzing a polyorganosiloxane having the formula:



or

wherein R_1, R_2, and R_3 may each be a hydrogen, a halogen, a hydroxyl group, a methoxy group, or an alkyl group with a perfluoroalkyl-containing organosilicone compound, having the formula $CF_3CH_2CH_2Si(OCH_3)_3$ (PP 0031-0033). Kobayashi fails to teach the ratio of the perfluoroalkyl-containing organosilicone compound to the polyorganosiloxane compound and the toner of the instant claims. Nakamura discloses that cure-type fluorine-modified silicone resins useful in carriers may comprise 15% of a trifluoropropyl group. Tamura discloses a toner comprising a binder resin, a colorant, a wax, and an external additive, wherein the toner has an endothermic curve from 105 to 150oc (PP 0021), wherein the endothermic curve of the toner correlates greatly with the wax in the toner (PP 0036). The wax may be an aliphatic hydrocarbon wax comprising a long-chain alkyl alcohol with a hydrocarbon wax (PP 0037), and may further be modified with a maleic anhydride (PP 0038), an unsaturated polycarboxylic anhydride. The toner comprises hydrophobic silica as an external additive (PP 0094) in an amount of 1.2 parts by weight to 100 parts by weight of the toner, wherein the silica has an average particle diameter of 25 nm (PP 0157). The wax has a peak molecular weight in the range of 3000-30,000 (PP 0046-0047). Tamura does not give the full molecular weight distribution (weight average, number average, and z-average) of the wax, but because it is a similar wax, and has a similar peak molecular weight, it would be

reasonable to conclude that the other properties of the wax would also be similar. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the toner of Tamura in the developer of Kobayashi because it is a known toner used in developers, and is similar to the toner of Kobayashi, so therefore one of ordinary skill in the art would have a reasonable expectation of success in substituting the toners, and to use the ratio of the perfluoroalkyl-containing organosilicone compound to the polyorganosiloxane compound of Nakamura, 15%, in the fluorine-modified silicone resin of Kobayashi because Nakamura teaches that it is a known, workable ratio.

3. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PGPub 2003/0091923 (Kobayashi) in view of 2002/0064724 (Nakamura) and US PGPub 2002/0076638 (Tamura) as applied to claim 1 above, and further in view of US Patent 6117607 (Shimizu).

Kobayashi, Nakamura, and Tamura disclose the toner of claim 1 as discussed above, but fail to teach the preparation of the toner. Shimizu discloses a toner comprising positively chargeable and negatively chargeable inorganic fine particles (column 2, lines 55-67), wherein the toner may be used in a two-component developer (column 1, lines 33-40). Shimizu teaches the inorganic fine powders may have a weight ratio of 50/50 to 10/90 of positively charged inorganic powders to negatively charged fine powders (column 3, lines 25-33) wherein the total makes about 1.3 wt% of the toner (table 2, column 14, lines 15-35) which would make the amounts of the individual inorganic powders substantially similar to those in the instant application. The inorganic

powders are broken into multiple groups depending on size, the first group has an average size of 30-120nm and the second group is less than 20nm (column 3, lines 34-39). Shimizu does not discuss the ignition loss of the inorganic fine powders, but since it is a similar product in a similar embodiment, it is reasonable to conclude that the ignition losses would be substantially similar to that of the instant application. The multiple inorganic fine particles make it possible to substantially eliminate problems inherent in nonmagnetic development (column 2, lines 55-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the toner of Shimizu in the developer of Kobayashi and Tamura because it is a known toner used in developers, and is similar to the toner of Kobayashi and Tamura, so therefore one of ordinary skill in the art would have a reasonable expectation of success in substituting the toners.

4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over US PGPub 2003/0091923 (Kobayashi) in view of 2002/0064724 (Nakamura) and US PGPub 2002/0076638 (Tamura) as applied to claim 1 above, and further in view of US Patent 6579653 (Yuasa).

Kobayashi, Nakamura, and Tamura disclose the toner of claim 1 as discussed above, but fail to teach the specific aminosilane coupling agent as described in the instant application. Yuasa discloses an aminosilane coupling agent may be γ-(2-aminoethyl) aminopropylmethyldimethoxysilane (column 26, lines 26-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the

aminosilane coupling agent of Yuasa as the aminosilane coupling agent of Kobayashi, Nakamura, and Tamura because it is a known aminosilane coupling agent and one would have a reasonable expectation of success in doing so.

Response to Arguments

5. Applicant's arguments filed 12/14/2009 have been fully considered but they are not persuasive.

Applicant argues that none of the waxes disclose in Tamura is a reacted compound of C_4-C_{30} long chain alkyl alcohol, unsaturated polycarboxylic acid or anhydride thereof, and unsaturated hydrocarbon wax. Applicant argues that the Fischer-Tropsch wax of Tamura cannot be the reacted wax of the instant application. The examiner respectfully disagrees. The Fischer-Tropsch wax of Tamura may not be the wax of the instant application, but the reference is good for all it teaches. Tamura teaches that the wax may contain long-chain alkyl carboxylic acids having a long-chain alkyl group (PP 0037) which may be used in a synthetic hydrocarbon wax having a functional group such as carboxyl group (PP 0038). Tamura fails to teach the synthesis of the wax, however to obtain a long-chain alkyl carboxylic acid, one of ordinary skill in the art would imply the use of a long-chain alkyl alcohol, and a carboxylic acid.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rachel L. Burney whose telephone number is (571)272-9802. The examiner can normally be reached on Mon-Thurs: 7:30-6:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/
Supervisory Patent Examiner, Art Unit 1795

RLB